

RF Exposure Estimation

1. Introduction

Product: Laser Distance Meter

Model No.: DTX10, DT10, DT10-B, DT10-B3, DT10-U, DT20, DT20-B, DT30, DT40, DT50, DT60, DT70, DT80, DT90, DT100, D110, D110S, DT11, LTM2M, LTM2X, XTape 1, XTape 2, XTape 3, XTape 4, XTape 5, XTape 6

FCC ID: 2AEOGDTX10

The EUT is a Laser Distance Meter, which contain BLE function inside.

Note: All models are identical in technical construction including circuit diagram, PCB layout, components and component layout, the differences lies only in the color and marketing purpose of different models. So RF exposure estimation were applied on DTX10, other models deemed to fulfill the requirement without further estimation.

2. Details about the Test Laboratory

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FCC Designation CN5009

Number:

3. Limit and Guidelines on Exposure to Electromagnetic Fields

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance v06, Mobile Portable RF Exposure, no SAR required if power is lower than the flowing threshold:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right]$$

$$\sqrt[3]{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation²⁵

The result is rounded to one decimal place for comparison

3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

4. Calculation method

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

Conducted Power + tune up tolerance = -6.14dBm = 0.243mW

Distance = 5 mm

f = 2.440 GHz

$[0.243/5] \cdot \text{SQRT}(2.440) = 0.076$

$0.076 \leq 3.0$

Therefore, excluded from SAR testing.

- TÜV SÜD China, Shenzhen Branch –

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